Dry deposition of acidic substances (nitrate and sulfate) to the East Sea

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The rapid expansion of human activities and population in the East Asia has increased pollutant emissions to the atmosphere. A part of the emitted pollutants can be trasported and deposited to the East Asian marginal seas including the East Sea surronded by Korea, Russia and Japan, which will impact on marine biogeochemistry. Among many pollutant species, in this study, we aimed to determine the amount of acidic substances (nitrate and nss-sulfate) supplied to the East Sea through dry deposition of airborne particles. To do so, we performed bimonthly field surveys. Atmospheric total suspended particles were collected using a high volume air sampler installed on the top floor at the R/V Tamgu 3 of the National Institute of Fisheries Sciences of Korea. Water soluble ions were extracted from the collected samples and analyzed by ion chromatography. As a result, nitrate concentrations ranged from 1.39 to 6.89 $\mu g/m^3$ with relatively higher concentration during the summer. The concentrations of nss-sulfate were from 3.21 to 9.83 $\mu g/m^3$. To identify potential source regions, we investigated the backward trajectories. As expected, higher concentrations were associated with winds blown from the west and thus more likely affected by human activities in China and Korea.